

# FULL VERSION Ridge/Hip Installation Guidelines

# VIPER VENT™



A Ridge Vent for a Durable Roof

## A Roof Exhaust Vent for all types of Roofing

VIPER VENT™ is a patented, light weight, nylon vent developed and manufactured by Keene Building Products™. It is designed to work in conjunction with the full spectrum of roofing materials where the roof pitch ranges from 2:12 to 18:12. VIPER VENT delivers superior performance, while providing a best in class visual aesthetic.

### Important Notice

This document is provided for guidance only, it is not intended to cover all local code variations.

It is important that the amount of exhaust ventilation (ridge/hip) not exceed the amount of intake ventilation (soffit). Ensure the proper amount of intake ventilation is installed before installing exhaust ventilation.

#### Before Beginning:

- Read these installation instructions completely from beginning to end.
- VIPER VENT must be installed using industry accepted, best building practices that meet all local code requirements.
- Ensure the roof is free from any structural defects or flaws. Keene Building Products patented VIPER VENT must only be applied over structurally sound surfaces.
- Before beginning any insulation, review all applicable local building codes and thoroughly read all instructions provided by the manufacture of all products to be used during the installation.
- Depending on your geographic location and local code requirements, specific installation steps may vary.
- As always, follow the OSHA standards for roofing.

### How it Works

VIPER VENT is manufactured with a one of a kind double density edge. This Keene exclusive feature allows VIPER VENT to provide superior strength and rigidity, ensuring its ability to maintain a sleek finished look that makes it virtually invisible from the curb.

In addition to its patented entangled net core, VIPER VENT incorporates a unique, nonwoven filter. Manufactured with extra thick fibers, the UV resistant textile is 40% thicker than the industry standard. This Keene only filter allows VIPER VENT to provide superior air flow over its lifetime. Over time, thinner fabrics become clogged with dust reducing the amount of air flow resulting in poor performance.

The combination of the patented entangled net with our extra thick, high air flow, non-woven filter fabric is what enables Keene Building Products to provide a product that leads the industry in overall performance.

### Table of Contents

Suitable Roof Applications.....	page 2
Tools and Materials.....	page 2
Calculating Ventilation Required.....	page 2
Net Free Vent Area (NFVA) Quick Reference.....	page 3
Roof Slot - Ridge.....	page 4
Roof Slot - Hip.....	page 4
VIPER VENT Installation.....	page 5
Alternate Installation Options.....	page 6

## Suitable Roof Applications

- Asphalt roof
- Tile roof
- Wood roof
- Metal Roof
- Slate roof

## Tools and Materials

### Tools:

- Tape measure
- Caulk line
- Circular saw
- Extension cord
- Hammer or nail gun <sup>1</sup>
- Utility knife
- Caulk gun
- Pry bar
- Work gloves
- Eye protection
- Required safety equipment

### Materials:

- VIPER VENT
- Hip and ridge shingles <sup>2</sup>
- Asphalt roof cement <sup>3</sup>
- Nails <sup>4</sup>
- Utility knife blades

### Material and Hardware Specifications

**Nail gun** <sup>1</sup> - If a pneumatic roofing nailer is used during the installation, confirm that the depth gauge is set so that the nail will completely penetrate the wood decking, or penetrate to a minimum depth of 3/4", or 1/8" through a APA rated roof sheathing. Air pressure is typically set between 80 and 95 PSI.

- Pneumatic Nail Requirements:
  - 11 or 12 Gauge
  - 3/8" minimum head diameter
  - Corrosion resistant
  - Meet or exceed ASTM D1667

**Hip and ridge shingles** <sup>2</sup> - Follow all manufactures instructions pertaining to the installation of all shingles.

**Asphalt roof cement** <sup>3</sup> - The asphalt roofing cement must meet or exceed the requirements of ASTM D4586.

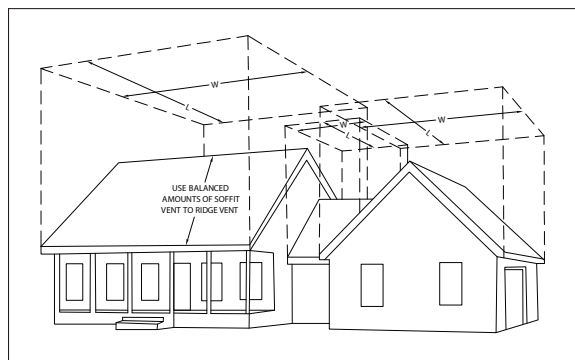
**Nails** <sup>4</sup> - All fasteners must be installed flush with the surface of VIPER VENT.

- Fasteners must be constructed from a corrosion resistant material and meet ASTM D1667.
- The minimum acceptable fastener head diameter is 3/8".
- The fastener must be long enough so that it will completely penetrate the wood decking, or penetrate to a minimum depth of 3/4", or 1/8" through a APA rated roof sheathing.

## Calculating Ventilation Required

Net Free Vent Area is basically the total unobstructed open area a vent provides. It is expressed as an area per liner foot. VIPER VENT provides an industry leading 15 square inches of vent area per liner foot (15 in<sup>2</sup>/LF).

To determine the amount of ventilation a structure requires a ratio of attic area to ventilation area is used. It is expressed in square feet. There are two common ratios that are used, 150:1 and 300:1. Meaning you need 1 square foot of free ventilation for every 150 square feet of attic space. Using these ratio's properly will determine the minimum amount of attic ventilation provided by code.



**150:1** – Where no moisture barrier is installed or the moisture barrier is in poor or unknown condition.

**300:1** – A moisture barrier is installed, and is in good condition – or – for hip vents installation.

Before you calculate the amount of ventilation required for your installation you will need to determine whether or not a moisture barrier has been installed in your structure:

- If a moisture barrier is in place, follow the formula outline on page 3. Table B.
- If no moisture barrier is used, follow the formula outline on page 3. Table A.
- If you are not sure if a moisture barrier is used or you have concerns about the integrity of the moisture barrier, follow the formula outline on page 3. Table A.

To ensure proper ventilation, it is important that the amount of ventilation be balanced between exhaust (ridge) and inlet (soffit). This means that the amount of soffit inlet vent needs to be equal to or greater than the amount of exhaust vent. So in short there are three items that determine the amount of ridge vent needed for a structure; the total area of the attic, the existence and condition of the vapor barrier, and the efficiency of the ridge vent being used. The following example will step through how to determine the amount of VIPER VENT required.

**Example: How to calculate the amount of exhaust vent needed**

A house has an attic space that measures 40' x 50'. Upon inspection you determine that the house has a moisture barrier installed, and it looks to be in good shape. In this example you will use 300:1.

**Step 1 - Determine area of attic space:**

$40' \times 50' = 2,000$  square feet (Ft<sup>2</sup>)

**Step 2 - Determine if an intact moisture barrier is in place**

In our example there is a moisture barrier and it is in good condition

**Step 3 - Calculate the total amount of ventilation (inlet + exhaust) needed**

$2,000 \text{ Ft}^2 \div 300$  (ratio for attics with moisture barrier installed) = 6.67 Ft<sup>2</sup>

**Step 4 - Convert square feet (Ft<sup>2</sup>) to square inches (in<sup>2</sup>)**

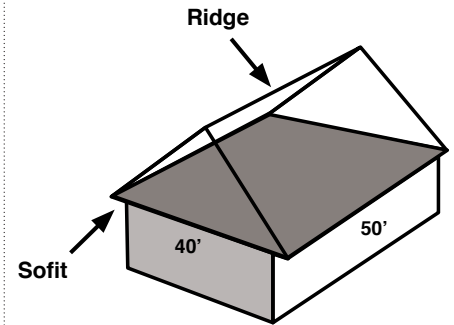
$6.67 \text{ Ft}^2 \text{ vent need} \times 144^a = 960 \text{ in}^2$  of vent needed

**Step 5 - Divide by 2 (1/2 for intake and 1/2 for exhaust)**

$960 \text{ in}^2 \text{ total vent} \div 2 = 480 \text{ in}^2$  Net Free Vent Area (NFVA) needed for both soffit inlet and ridge/hip exhaust to properly vent the attic space.

**Step 6 - Determine the number of liner feet (LFT) of ViperVent needed**

$480 \div 15^b = 32$  liner feet of VIPER VENT needed



<sup>a</sup> - 1' x 1' = 12" x 12", 12 x 12 = 144 square inches per square foot.

<sup>b</sup> - VIPER VENT provides 15 in<sup>2</sup> NFVA per liner foot.

**Net Free Vent Area (NFVA) Quick Reference**

Table A

150:1 NVFA No or Damaged Moisture Barrier			
Attic area (Ft <sup>2</sup> )	Ridge Vent (In <sup>2</sup> )	Soffit Vent (In <sup>2</sup> )	VIPER VENT (LFT)
1000	480	480	32
1250	600	600	40
1500	720	720	48
1750	840	840	56
2000	960	960	64
2250	1080	1080	72
2500	1200	1200	80
2750	1320	1320	88
3000	1440	1440	96

Table B

300:1 NVFA Moisture Barrier Installed or Hip Installation			
Attic area (Ft <sup>2</sup> )	Ridge Vent (In <sup>2</sup> )	Soffit Vent (In <sup>2</sup> )	VIPER VENT (LFT)
1000	240	240	16
1250	300	300	20
1500	360	360	24
1750	420	420	28
2000	480	480	32
2250	540	540	36
2500	600	600	40
2750	660	660	44
3000	720	720	48

## Roof Slot - Ridge

### 1. Ridge Vent:

#### A. SEE DIAGRAM 1 & 2.

Determine the type of roof construction.

- **Engineered Roof Truss (no ridge pole):** a 1 inch slot will be cut on both sides of the ridge line. [Diagram 1]
- **Rafter Framed Roof (ridge pole):** a 1 inch slot will be cut on both sides of the ridge pole at the ridge line. [Diagram 2]

#### B. SEE DIAGRAM 3 & 4.

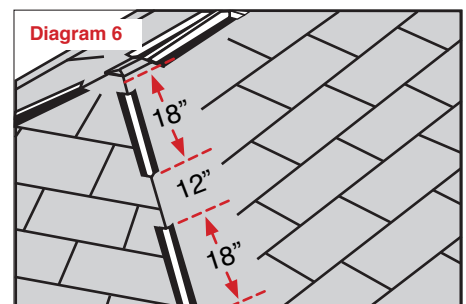
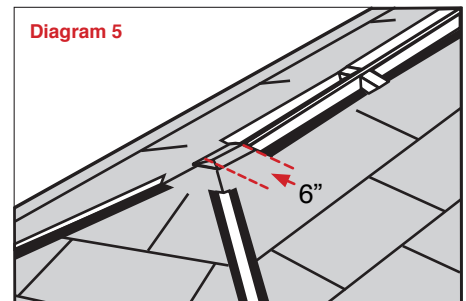
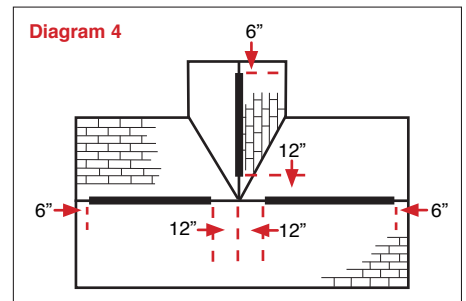
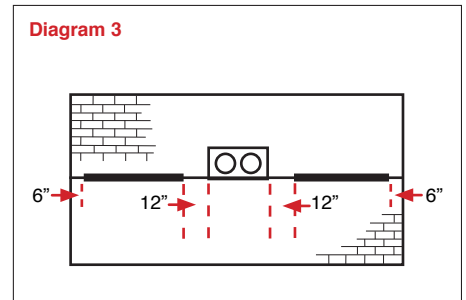
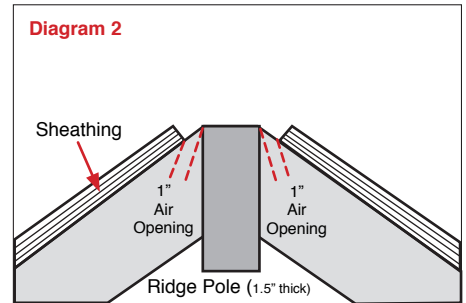
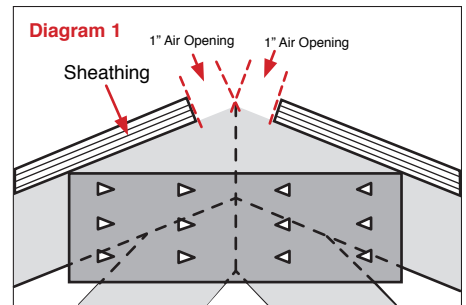
Lay out the location of the slots to be cut, ensure the length of the slots equals the minimum amount of VIPER VENT required.

Slots must end:

- 6 inch from rake edge or 6 inch from inside gable wall. [Diagram 3]
- 12 inch from any ridge line obstruction, such as a chimney. [Diagram 3]
- 12 inch from any intersection on a "T" or "L" roof. [Diagram 4]

#### C. Cut the ventilation slot and remove the unwanted roof decking material.

- Follow the shingle manufactures installation instructions.
- Install the roofing shingles up to the edge of the ventilation slot. Care must be taken to ensure that no roofing material covers the ventilation slot.



## Roof Slot - Hip

### 2. Hip Vent:

#### A. SEE DIAGRAM 5 & 6.

Lay out the location of the slots to be cut, ensure the length of the slots equals the minimum amount of VIPER VENT required.

- A 1 inch slot will be cut on both sides of the hip rafter along the hip line.
- A continuous slot is not recommended, start the slots 6 inch from where the hip meets the ridge. [Diagram 5]
- Slots should be no more than 18 inch length, allow 12 inch between slots. [Diagram 6]
- Slots should not extend more than 1/3 of the way down the hip line. This is to ensure proper ventilation.

#### B. Cut the ventilation slot and remove the unwanted roof decking material.

- Follow the shingle manufactures installation instructions.
- Install the roofing shingles up to the edge of the ventilation slot. Care must be taken to ensure that no roofing material covers the ventilation slot.

**NOTE:** The ventilation slot can be cut either before or after the shingles have been installed. If the slot is to be cut after the roof shingles have been installed, it is recommended that a carbide tipped blade be used.

**CAUTION:** Care must be taken to ensure that the cut will ONLY penetrate the decking. The saw depth must be set to ensure the cut WILL NOT penetrate the roof frame. It is recommended that a test cut be performed between the roof trusses to ensure the proper cut depth is used.

## VIPER VENT Installation

### 3. VIPER VENT:

**A. Cut the VIPER VENT to the desired length and set aside until step D.**

- To obtain optimal visual appeal install VIPER VENT so that it extends from ridge edge to ridge edge and butts up flush against any chimneys that are located on the ridge line.
- For roofs with “T” or “L” intersection cut one piece that will extend continuously from rake edge to rake edge along the longest length. If seaming is required, avoid seaming at the ridge intersection. See step F for further instructions on seaming.
- For hip line installation, to obtain optimal visual appeal, install VIPER VENT from hip/ridge line intersection to rake edge.
- When cutting additional pieces, cut pieces such that they will butt up tightly against the adjoining piece. Care must be taken so that no gapes in the VIPER VENT are present.

**B. SEE DIAGRAM 7.**

**BEFORE installing the VIPER VENT, cut a hip and ridge shingle a minimum of 6 inches wide for each rake edge. Nail a hip and ridge shingle at each rake edge. [Diagram 7]**

**C. SEE DIAGRAM 8.**

**To ensure proper performance, install a bead of asphalt roofing cement 3 inches from ALL edges of the ventilation slot. [Diagram 8]**

- The bead must run uninterrupted along all edges of the ventilation slot. This will help fill in any gaps between the VIPER VENT and the roof shingles.
- The asphalt roofing cement must meet or exceeds the requirements of ASTM D4586.

**D. SEE DIAGRAM 9.**

**Center the VIPER VENT over the ridge/hip line. [Diagram 9]**

- Secure one end of the VIPER VENT with a nail on each side on the printed line.
- Roll out the entire length of VIPER VENT.
- Remove any slack in the VIPER VENT and secure the second end with a nail on each side of the printed line.

*NOTE: Care must be taken to ensure the VIPER VENT remains centered over the ridge/hip line.*

**E. Finish securing the section of VIPER VENT with a nail approximately every 4 feet on both sides of the ridge line.**

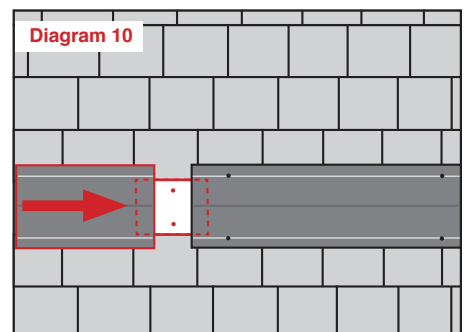
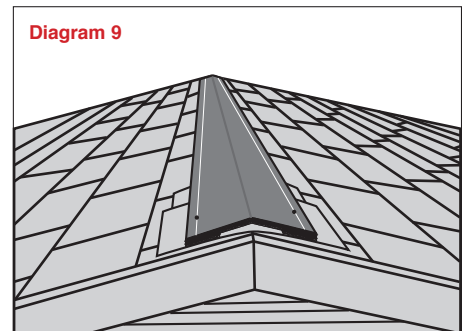
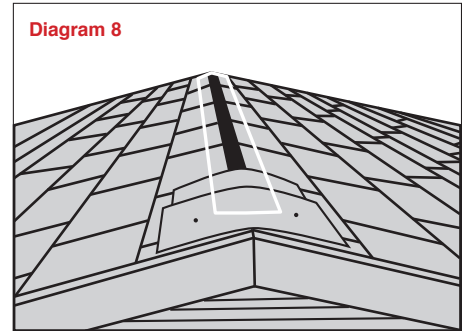
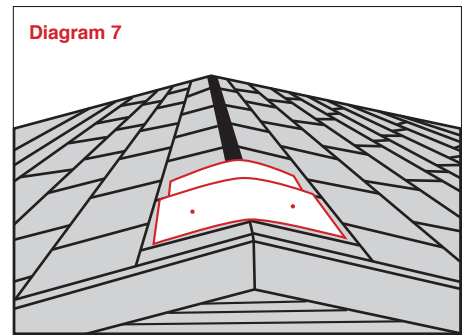
- Repeat procedure for each piece of VIPER VENT.
- When seaming two pieces of VIPER VENT together, follow the instructions detailed in step F.

**F. SEE DIAGRAM 10.**

**To join two sections of VIPER VENT. [Diagram 10]**

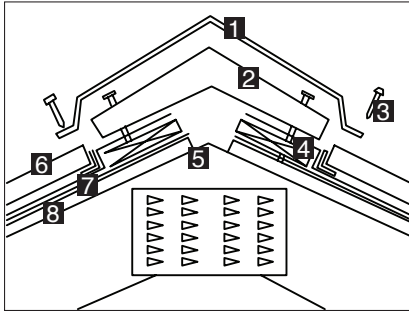
- Determine where the seam will occur.
- Center a cap shingle under the area where the seam will occur.
- Secure the cap shingle with a single nail on each side of the ridge line.
- Install a bead of asphalt roofing cement 3 inches from ventilation slot.
- Butt the two sections of VIPER VENT together snugly, taking care that there is no gap between them AND that they do not overlap.
- Secure the end of each section of VIPER VENT with a nail on each side of the printed line.

**G. Install cap shingles according to manufactures instructions.**



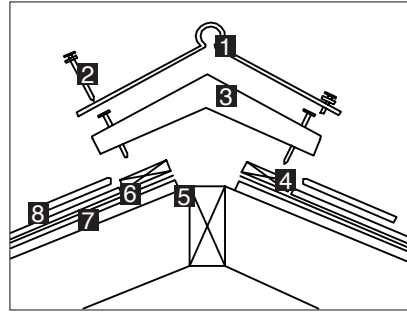
# Alternate Installation Options

## METAL ROOFING, Standing Seam



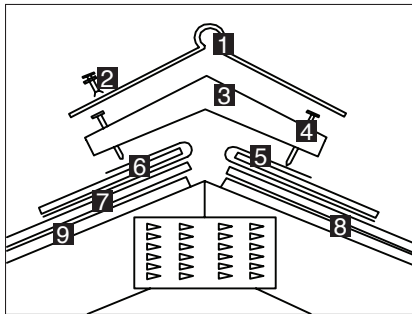
- 1 Metal cap
- 2 VIPER VENT
- 3 Sheet Metal Fastener
- 4 Nailer
- 5 1" Air opening
- 6 Standing seam panel
- 7 Roof underlayment
- 8 Substrate

## SLATE ROOFING



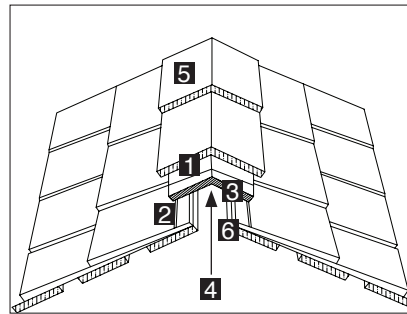
- 1 Ridge roll cap
- 2 Metal cap fastener
- 3 VIPER VENT
- 4 Nailer
- 5 1" Air opening
- 6 Roof underlayment
- 7 Substrate
- 8 Slate roofing

## WOOD SHINGLES ROOFING, Normal Weather Service



- 1 Ridge roll cap
- 2 Metal cap fastener
- 3 VIPER VENT
- 4 Fasteners
- 5 Roofing Felt
- 6 Shingles
- 7 Nailer
- 8 Roof underlayment
- 9 Substrate

## CEDAR ROOFING

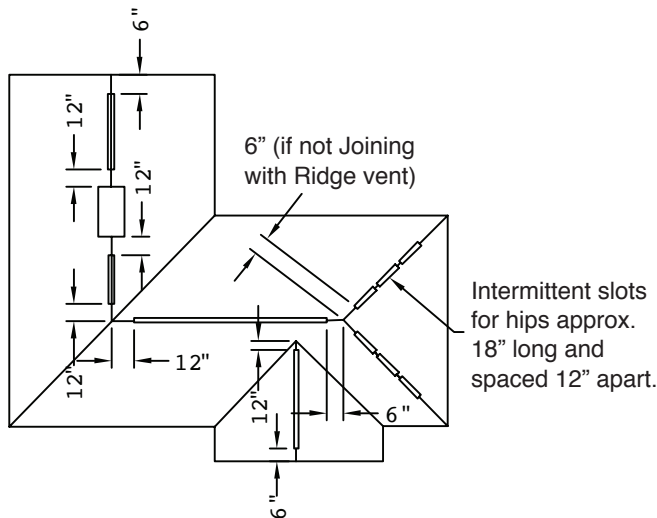


- 1 Roofing felt
- 2 Caulking
- 3 VIPER VENT
- 4 Airflow through the ridge
- 5 Shake or shingle
- 6 Felt folded back

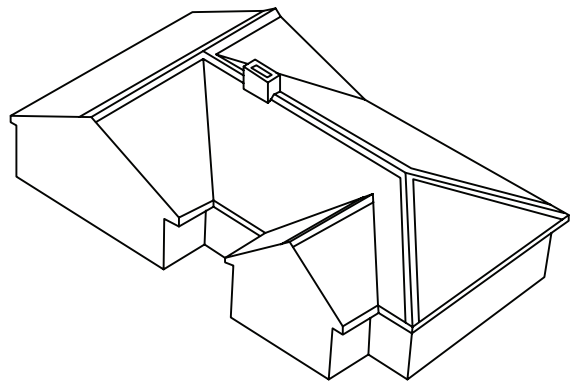
For Best Curb Appeal:

Install VIPER VENT from edge to edge along the ridge line and along the hip line.

**ILLUSTRATION A:**  
EXAMPLE OF SLOT CUT OUTS



**ILLUSTRATION B:**  
MAINTAINING A CONTINUOUS ROOFLINE WITH VIPER VENT



For additional product information visit [Keenebuilding.com](http://Keenebuilding.com).